

CLAIMS

What is claimed is:

1. A method for matching and registering medical image data, comprising the steps of:
 - (a) obtaining a first image data set of a tubular structure;
 - 5 (b) obtaining a second image data set of said tubular structure;
 - (c) determining a first path of said tubular structure in said first image;
 - (d) determining a second path of said tubular structure in said second image;
 - (e) determining landmarks in said first path;
 - (f) determining landmarks in said second path;
 - 10 (g) matching said landmarks in said first path with said landmarks in said second path through identifying correspondence between said landmarks of said first path with said landmarks of said second path; and
 - (h) registering said first path to said second path through stretching or shrinking of said first path to said second path until said corresponding landmarks in said
15 first path and said second path coincide along said respective paths.
2. The method as set forth in claim 1, wherein the step of matching comprises the step of sorting and comparing the position of said landmarks in said first path with said landmarks of said second path based on anatomical information along
20 said respective paths.

3. The method as set forth in claim 1, wherein the step of registering comprises the step of linear stretching or shrinking.
4. The method as set forth in claim 1, wherein the step of registering comprises the step of non-linear stretching or shrinking.
5. The method as set forth in claim 1, further comprising iterative and recursive steps until one or more decision criteria are met.
6. The method as set forth in claim 1, wherein said tubular structure is a colon, blood vessel or airways.
7. The method as set forth in claim 1, wherein said first image data set is based on computed tomography colonography data from a colon in supine position and wherein said second image data set is based on computed tomography colonography data from a colon in prone position.
8. The method as set forth in claim 1, wherein said first image data set is based on computed tomography colonography data from a colon in prone position and wherein said second image data set is based on computed tomography colonography data from a colon in supine position.

9. A method for registering computed tomography colonography data obtained in a supine position and in a prone position, comprising the steps of:
- (a) obtaining said computed tomography colonography data in said supine position;
 - (b) obtaining said computed tomography colonography data in said prone position;
 - 5 (c) determining a first path in said computed tomography colonography data of said colon in said supine position;
 - (d) determining a second path in said computed tomography colonography data of said colon in said prone position;
 - (e) determining landmarks in said first path;
 - 10 (f) determining landmarks in said second path; and
 - (g) matching said landmarks in said first path with said landmarks in said second path through identifying correspondence between said landmarks of said first path with said landmarks of said second path; and
 - (h) registering said first path to said second path through stretching or shrinking of
15 said first path to said second path until said corresponding landmarks in said first path and said second path coincide along said respective paths, or registering said first path to said second path through stretching or shrinking of said second path to said first path until said corresponding landmarks in said first path and said second path coincide along said respective paths.
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10. The method as set forth in claim 9, wherein the step of matching comprises the step of sorting and comparing the position of said landmarks in said first path

with said landmarks of said second path based on anatomical information along their respective paths.

- 5 11. The method as set forth in claim 9, further comprising the step of linear stretching or shrinking.
12. The method as set forth in claim 9, further comprising the step of linear stretching or shrinking.
- 10 13. The method as set forth in claim 9, further comprising iterative and recursive steps until one or more decision criteria are met.